

NASA SBIR/STTR Technologies

12-1 A1.01-9814 RIDES: Raman Icing Detection System

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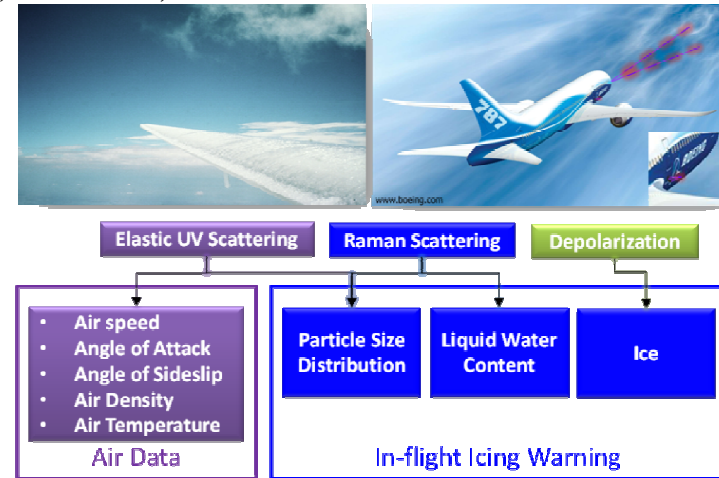
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Identification and Significance of Innovation

Inflight icing of engines and airframe presents a significant hazard to air transport, especially at lower flight elevations, on approach. Michigan Aerospace Corporation is developing an integrated LIDAR instrument capable of identifying icing conditions while also allowing for air data sensing and other hazard detection capabilities.

Expected TRL Range at the end of Contract (1-9): TRL 3 at end of Phase I. TRL 5 expected at the end of Phase II.



Technical Objectives:

Objective 1: Determine the operational envelope of the sensor and the resulting requirements.

Objective 2: Perform trade studies and photon budgets using models to determine the design parameters of the instrument.

Objective 3: Design the instrument for fabrication in Phase 2.

Objective 4: Algorithm development for droplet size distribution.

Work Plan:

- Requirement Definition
- Trade Studies
- Instrument Design
- Demonstration Plan for Phase II
- Risk Matrix and Mitigation Plan
- Recommendations for Phase II

NASA Applications

The system resulting from this effort will allow better studies of icing by giving clearer indications of the actual conditions outside a test aircraft in real time, providing safer and more accurate means of studying icing conditions.

Non-NASA Applications

Military and civil aviation is often affected by icing, sometimes severely, and the ability to detect these conditions so as to avoid or at least account for them (activating de-icing systems, etc.) would be of tremendous safety value. Combining the system with an optical turbulence detection, ash cloud detection and an optical air-data system would result in a unprecedented robust optical-based sensor suite for modern aircraft.

Firm Contacts

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NON-PROPRIETARY DATA